1 9.15
F 45s

MUSEUM STORIES FOR CHILDREN

Presented by

The James Nelson and Anna Louise Raymond Foundation
for Public School and Children's Lectures

FIELD MUSEUM OF
NATURAL HISTORY

Series XXVIII, Number 1
March 6, 1937

93775

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

FLIES GOOD AND BAD

Of all the insect pests that annoy man and animals, the worst are the flies. Few places are too cold or dark for these insects to find food on which to live. While many kinds are destructive to animals and plants, there are many other kinds which prey upon unclean materials and insects that destroy growing plants.

Flies belong to the insect group called "Diptera." Two Greek words, "dis" meaning "two" and "pteron" meaning "wing," were combined. Hence all insects having but two wings belong to the fly family. In size they vary from the tiny midges which are so unpleasant when they get in our eyes, to the two-inch-long horsefly that infests the edges of forests and country roads, and the fat, black and yellow fellows that look exactly like bumble bees until closely examined.

Most flies have heads large in proportion to their bodies, with compound and simple eyes which are often brilliantly colored with green and purple. Rising close to the eyes are the antennae, or feelers, which are most important in telling to which family the fly belongs. The mouth parts are made for piercing and sucking, not chewing. Some flies have no mouth parts at all and take no food during the adult stage.

The wings may be bare, or clothed with tiny hairs or scales. The outer edges and veins of mosquito wings are covered with scales, and on some there is a changing of color like that seen on a bit of oil in the sunlight. Back of the two wings are two little knobbed threads that vibrate constantly when the fly is in the air, but no one knows just why they are there. A few kinds of flies have no wings, and some have wings so large and heavy that their owners can make only short journeys.

As a usual thing the flies do not have much color, but there are some types with gorgeous blue and green bodies; others are a rich brown with yellow splotches and make nice specimens for your insect collections. The bodies of flies may be naked or covered with stiff bristles or velvety hairs. Those flies mistaken for moths have the latter kind of coat. They will have four wings if they are moths; two, if they are flies.

Mother flies are not at all particular about where they lay their eggs. It may be in a cheese, fresh meat, living animals or plants—all furnish the kind of food the babies must have when they hatch from

the eggs. The babies are called "maggots," and oh, what appetites they do have! None have wings or legs. Hooks take the place of feet. With these they cling, jerk themselves forward, or secure the needed food. When growing time is over, they cease eating and begin the change to adults. Usually the change takes place in the skin in which the maggot spends its last days. A few maggots have silk tubes in their mouths, similar to those of spiders. From these they spin silken threads with which they pull together the edges of leaves. In the cradle thus made the change takes place.

Fly maggots, or larvae, are often far more interesting than their parents. For instance, there is the maggot of a very common garden fly which often joins its comrades and forms processions sometimes twelve to fourteen feet long and several inches wide. It is thought this is done when food becomes scarce. Some maggots live in strange places. The petroleum pools of California, the salty seas and hot water springs have their special kinds. But it is not necessary to search them out for study. If you have a microscope, look at the maggot which causes the scab on the Irish potato, or the little, pink, so-called "worm" inside an apple. Do not be surprised if they look like ogres.

There are thousands of different kinds of flies. Some of them are found only in certain areas, like the Tsetse Fly of Africa which causes sleeping sickness, and the gnats and mosquitoes of the tropics which cause malaria and other fevers. An odd fly is the curious, wingless cranefly known as Chionea, which is found on the surface of snow in our own land and in Europe. Man has carried flies from one land to another and thus spread disaster. The Hessian Fly, which causes millions of dollars of loss to our wheat crops, was not intentionally introduced into the United States, but the various flies which feed upon the caterpillars that destroy our forest trees and other valuable crops have been brought in for a definite purpose.

The house-fly and the mosquito, the midges and the gnats, the craneflies with their wobbly, long legs, the clumsy fliers of meadows and forests, and the vicious horseflies—all are members of the two-winged insect group, the true flies.

MARGARET M. CORNELL, Guide-lecturer

Note: In Hall 18 is a case showing flies to be seen in the dune area, and in Hall 34 are some pieces of amber with flies buried deep within.

Save your Museum Stories. You will find them useful for looking up things you may want to know.

The open hours are as follows:

Nov., Dec., Jan., Feb., Mar. - -	9 A.M. to 4:30 P.M.
Sundays, Nov. 1–Mar. 31 - - -	9 A.M. to 5:00 P.M.
April, September, October - - -	9 A.M. to 5:00 P.M.
May, June, July, August - - -	9 A.M. to 6:00 P.M.

Field Museum is free to children at all times.
It is free to adults on Thursdays, Saturdays, and Sundays.

CLIFFORD C. GREGG, Acting Director

MUSEUM STORIES FOR CHILDREN

FIELD MUSEUM
NATURAL HISTORY

Presented by

The James Nelson and Anna Louise Raymond Foundation
for Public School and Children's Lectures

Series XXVIII, Number 2
March 13, 1937

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

THE PAIUTE INDIANS

The Paiute Indians, in early times, chose one of the most inhospitable spots in our country for their home. To the east of the Sierra Nevada range in California lies a barren, forbidding land. It was in this Great Basin between the Sierras and the Wasatch mountains that the Paiutes roamed. Now they live on a few widely separated reservations, or work on ranches belonging to white men.

There were really two large groups of Paiutes—one in northern California and Nevada, and the other in southern California, Nevada and Utah.

Not many of us would care to live in the country of the Northern Paiute. Part of this group lived in the northeastern corner of California. Because they had no source of food upon which they could always rely, they were continually hunting and gathering seeds. Often during the winter there was not enough food for everyone. These Northern Paiutes had no oak and little pine, only sagebrush, grasses and the juniper. Deer, rabbits and prongbuck provided their meat and clothing. Boys began hunting when they were eight or nine years old.

In spite of the fact that they had to spend much of their time securing food, these Indians did find time to play games. A favorite with the men was a kind of football, played with a deerhide ball and green willows bent in arch shape to form the goals. The women played double-ball shinny. Often the game would last half a day. Another game played by many of the Paiutes was the hoop and pole game. A small willow hoop was rolled along and the men tried to throw their lances through it.

Some distance to the south, in Owens Valley, lived another band of Northern Paiutes, often called the Eastern Mono. They lived in a very mountainous and beautiful, but extremely desolate country. Like their northern relatives, they had little variety in their food, and never an abundance. They could, however, climb the eastern side of the Sierra Nevada mountains and collect "pine nuts" in the piñon forests which grew on the slopes. Occasionally they secured acorns through trade with the tribes living in the fertile country west of the Sierras. Roots, to be used as food, were dug with sticks of mountain mahogany; seeds, to be made into meal, were gathered in cone-shaped baskets. An Eastern Mono often wore a basket cap to

protect his forehead from the carrying band when he was hauling a heavy load.

One band of Paiute Indians, the Western Mono, crossed the Sierra Nevadas and entered the rich, fertile California country. They alone, of all the Paiutes, lived in a land of plenty, for they had forests of evergreens, pine nuts, acorns, bear, fish and streams of fresh water. They lived in small family groups and all had equal rights to the wild food. They spent the summer in the mountains, occasionally crossing the Sierras to Owens Valley to collect pine nuts and to trade acorns. In the winter they returned to the western slopes. They played a kind of football in which they kicked the ball as far as fifteen miles. Their homes were made of brush, cedar bark and grass.

The Western Mono were the only Paiutes who lived in the oak country. They gathered the acorns in the fall, spread them out in the sun to dry, and then stored them in cone-shaped granaries, thatched with grass and built on high platforms. When the acorns were needed, the women cracked them open, and ground the meats, wormy ones and all, in stone mortars, or grinding holes, in the bedrock. Then, to remove the bitter taste, hot water was poured over the meal, which was dried and stored until needed. Mush was made by boiling the meal in baskets, adding hot stones until it was cooked stiff and jelly-like. Looped sticks were used for stirring. Acorn bread, made from the meal, is really excellent food although not all white men like the taste.

The Southern Paiutes lived in a country that had little to offer. They spent most of their time seeking food. There is less than eight inches of rain in their country in a year, and almost no snow.

Today the Paiutes are the largest Indian tribe in California. This is probably because they lived in so undesirable a country that white men did not crowd them out.

VELMA D. WHIPPLE, Guide-lecturer

Note: Case No. 27, Hall 6, has games and clothing of the Northern Paiutes. Case No. 28 contains digging sticks, cooking utensils and games of the Western Mono.

Save your Museum Stories. You will find them useful for looking up things you may want to know.

The open hours are as follows:

Nov., Dec., Jan., Feb., Mar. - -	9 A.M. to 4:30 P.M.
Sundays, Nov. 1–Mar. 31 - - -	9 A.M. to 5:00 P.M.
April, September, October - - -	9 A.M. to 5:00 P.M.
May, June, July, August - - -	9 A.M. to 6:00 P.M.

Field Museum is free to children at all times.
It is free to adults on Thursdays, Saturdays, and Sundays.

CLIFFORD C. GREGG, Acting Director

MUSEUM STORIES FOR CHILDREN

Presented by

The James Nelson and Anna Louise Raymond Foundation
for Public School and Children's Lectures

FIELD MUSEUM OF NATURAL HISTORY

Series XXVIII, Number 3
March 20, 1937

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

ECLIPSES

Long, long ago, primitive man looked upon eclipses with fear and awe. Not being able to figure out what caused them, he thought they must be the work of demons of darkness and evil.

A very common belief was that spirits in the shape of animals were attacking the sun or moon and attempting to take out bites, or swallow it completely. In some lands the animal was a dragon; in others, squirrels, rabbits, lizards or toads. To have the sun destroyed was a terrible thing, as life depended upon its light, so when an eclipse began the people would shoot arrows and hurl spears heavenward, beat drums and make loud noises—perhaps have a sacred procession. It was hoped by these means to scare away the animals. There was also a belief that the moon was the protector of the dogs. Hence, when the moon tried to cover up their beloved sun, the people would beat the dogs and make them howl to attract the attention of the moon spirit, and cause her to leave the sun and come to the aid of her children on earth.

In other lands, eclipses were thought to be battles between the sun and moon. The dark portions were the black bruises or the dust clouds raised by the combats. Certain parts of Germany and India believed that poison fell during an eclipse, so all cattle were closely herded, wells were covered and no water was drunk. Even today, the Eskimos of the lower Yukon believe that an unclean substance descends to earth during an eclipse. Just the instant one begins the women turn all their pots, buckets and dishes bottomside up. The Cahuillas of the south have a still more strange belief. They will not eat during an eclipse for fear they may swallow a sun or moon spirit.

Gradually, the old beliefs regarding eclipses are passing away, except in those lands where schools are few and far apart. But the change has been very, very slow. Many a man was killed or tortured in the early days for daring to say that eclipses were not caused by spirits. So we can understand why even those who knew the true cause kept silent.

We owe much of the earliest knowledge regarding eclipses to the shepherds of the Tigris-Euphrates valley. They spent their lives under the open sky, and watching the heavens day and night, came to realize that the sun, moon and planets followed a regular path in the sky. To this narrow belt they gave the name "Zodiac." As years passed, they discovered that sometimes the movements of the sun and moon in their paths brought them along the center of that

belt, and then it was that eclipses occurred. Most wonderful of all, those shepherds kept records of the eclipses and found that 18 years 11 days and 8 hours later the same kind of eclipse happened again. Then began the foretelling of eclipses to take place hundreds of years in the future.

This old earth of ours and its moon go along the same way year after year, traveling around the sun. If the earth gets between the moon and the sun, and it is at the time the moon is full and near enough to the earth to pass through the shadow of the earth, then there will be an eclipse of the moon. This does not happen very many times in one year. Usually, the moon is beyond the cone-shaped shadow. Eclipses of the moon are known as "lunar eclipses."

Sun, or "solar eclipses," are always more exciting than lunar eclipses. They occur in the daytime and we have an opportunity to see what happens. Sometimes, the moon passes across just a small part of the sun, and then it looks as if something had indeed taken out a big bite. Occasionally, quite a large portion is covered, and again the moon may completely shut out the sun's light for a short time. Then we have the thrill of a "total eclipse."

It is during a total eclipse of the sun that we can look at it with smoked glasses and see its outer edge or "corona," and watch the fantastically-shaped flames shoot out thousands of miles into space. If our eyes are quick, we may see points of sunlight between the mountains of the moon at the edge of the dark blot on the sun. These bits of sunshine are called "Bailey's Beads." During the few moments the moon takes to pass in front of the sun, people living in the narrow belt cast by its shadow, rush to take pictures and make tests with the instrument known as a spectroscope. By means of colored bands, this instrument shows what gases are in that flame that leaps so far into space.

Using a large flashlight, a golf ball and a tiny dark pea you can see for yourselves how eclipses are formed.

MARGARET M. CORNELL, Guide-lecturer

Note: In Hall 35 is a large model of the moon showing the mountains and valleys which are responsible for the formation of the "Bailey's Beads."

Save your Museum Stories. You will find them useful for looking up things you may want to know.

The open hours are as follows:

Nov., Dec., Jan., Feb., Mar. - -	9 A.M. to 4:30 P.M.
Sundays, Nov. 1–Mar. 31 - - -	9 A.M. to 5:00 P.M.
April, September, October - - -	9 A.M. to 5:00 P.M.
May, June, July, August - - -	9 A.M. to 6:00 P.M.

Field Museum is free to children at all times.
It is free to adults on Thursdays, Saturdays, and Sundays.

CLIFFORD C. GREGG, Acting Director

MUSEUM STORIES FOR CHILDREN

Presented by

The James Nelson and Anna Louise Raymond Foundation
for Public School and Children's Lectures

Series XXVIII, Number 4
March 27, 1937

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

VICIOUS DWELLERS OF THE CORAL FORESTS

There are many fishes and other sea animals that must live by preying upon other animals, and sometimes their methods seem rather savage. They must eat to live and they must secure their food so quickly that they will not be killed, in turn, by other hunters who would prey upon them. There are very few of them that attack more than they actually need for food.

The barracuda is one of the worst pirates and is sometimes called "the tiger of the sea." More than four feet in length, shaped like the pike (a fish of our fresh waters), he is a powerful swimmer. His long, pointed jaws are filled with teeth which are flattened, sharp-edged and dagger-like. He usually hunts alone and his attack is so sudden and savage that he is feared, not only by his deep-sea neighbors, but also by fishermen and bathers.

In the coral forests of the warm seas there are abundant hiding places, both for the timid and the cunning. Often, the coloring and pattern of markings of an animal blends so perfectly into the coloring of his surroundings that he is not easily seen. The morays with their marbled patterns of black and green can lie well concealed in a dark nook. Their eel-like bodies with round gills and no breast fins do not have the appearance of fish, yet they really belong in that family. They have small heads armed with pointed, knife-like teeth well adapted to grasping and holding their prey.

Probably, the most savage of the sea rovers are the silvery, blue-backed bluefish. They are larger than bass, but resemble them in appearance. The bluefish swim in large schools just beneath the surface of the water—ever on the lookout for food. Like a pack of hungry wolves, they destroy everything before them, leaving only a trail of fragments to show where they have been.

Later the tiger shark may finish the fragments and swim on over the sandbar that lies outside the coral forest. His great size and skill in swimming make him a formidable enemy. The crescent-shaped mouth on the underside of his flat head is armed with several rows of flat, sickle-shaped teeth that have fluted edges like those of a bread knife. The shark swims above his prey and sometimes has to push the end of his snout out of the water in order to grasp the food he is seeking. He may turn on his back and strike from below.

Closely associated with the sharks are the sucker-fish. While more often seen about the sharks, they may attach themselves to almost any of the larger animals of the sea. By pushing the smooth tops of their heads to the smooth body surface of another animal, they secure a free ride. As soon as they approach a school of fish they pull loose from the animal that has brought them to their feast. They never attack a shark under any condition.

Tiger sharks must search for their favorite food, as it consists of the sting ray. This is a sluggish sand or mud-loving fish with flattened body. Some have long, whip-like tails with a vicious spine at the base of the tail. This spine has barbs pointing backward which inflict a nasty wound when the spine is thrust into flesh. Another kind of sting ray has a short stubby tail without any spine. It does not need any. On the sides of its neck are electric batteries with powerful force. Strange stories are told about the shocks which this fish is able to give to those who would pick it up by putting a hand below and above.

On the floor of the coral forest live the starfish which are badly named, as they are not fish. They have five (or many times five) arms, all composed of lime material and covered with a leathery skin of reddish brown. On the underside of each arm are two rows of tiny tube feet, thousands in number, by which they move along the floor of the sea. Should one of the arms be injured, it can be dropped and a new one grows in its place. By means of the suckers of its feet, the starfish can open the shell of an oyster or clam, then draw the victim's flesh into its own stomach and use it as food.

The battle to secure food is just as hard for the dwellers of the coral forests as for the animals that live on land.

LEOTA GREGORY THOMAS, Guide-lecturer

Note: In Hall 18 are mounted specimens of the barracuda, moray, shark, ray and starfish, and some of the corals among which these animals hide and hunt.

Save your Museum Stories. You will find them useful for looking up things you may want to know.

The open hours are as follows:

Nov., Dec., Jan., Feb., Mar. - -	9 A.M. to 4:30 P.M.
Sundays, Nov. 1–Mar. 31 - - -	9 A.M. to 5:00 P.M.
April, September, October - - -	9 A.M. to 5:00 P.M.
May, June, July, August - - -	9 A.M. to 6:00 P.M.

Field Museum is free to children at all times.
It is free to adults on Thursdays, Saturdays, and Sundays.

CLIFFORD C. GREGG, Acting Director

MUSEUM STORIES FOR CHILDREN

Presented by

The James Nelson and Anna Louise Raymond Foundation
for Public School and Children's Lectures

FIELD MUSEUM OF NATURAL HISTORY

Series XXVIII, Number 5
April 3, 1937

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

DRAGON-FLIES PAST AND PRESENT

A bright shimmering dragon-fly is an object of beauty as it goes flitting over a stream in the summer sunshine, or as it sits motionless upon a twig with its wings held straight out from the body and its great eyes gleaming like gold. All dragon-flies, however, are not found near water and some prefer high dry fields; others like the woods.

Dragon-flies were so named because of their extremely large appetites and because they eat only living insects, which they pursue through the air. They capture their prey on the wing and feed upon almost all flying insects, especially gnats, midges and mosquitoes. The larger dragon-flies eat house flies, wasps, big butterflies and even smaller dragon-flies.

Many dragon-flies are superb flyers and in their speed and agility some exceed even swallows. They can alter their direction of flight with perfect facility and unerringly capture their prey. There is one kind of dragon-fly which has been known to travel nearly sixty miles an hour.

Dragon-flies are harmless to man and are of real value because the nymphs eat mosquito wrigglers in the water, and the adults catch the mosquitoes they find hovering over the water. Dragon-flies' jaws are powerful and their appetite seems never to be satisfied; so it is an unfortunate insect that crosses their path. To their insect kindred they are indeed ogres on wings.

Like some birds and butterflies, there are some dragon-flies that migrate in the autumn to warmer lands, and great swarms have frequently been seen many miles out at sea.

Some dragon-flies possess seven eyes. Three may be simple and four may be compound eyes. One pair of the compound eyes is for day use; the other pair is for night. The night-eyes are fitted especially to see the movement of objects in a dim light. A compound eye is a group of tiny separate lenses. There are 28,000 lenses in one compound eye of a dragon-fly. No wonder he is such a successful hunter when he has so many strong eyes!

The mother dragon-fly lays her eggs directly in the water or fastens them to aquatic plants. The eggs hatch into "nymphs" or baby dragon-flies and they immediately swim off in search of something to eat. Dragon-fly nymphs are ogres of the ponds and streams. Their jaws

and legs are very strong. The nymphs will attack creatures twice their own size. They are not particular about their food and there is hardly one which will not devour with apparent relish the members of his own family. The nymphs have no wings, but there are four pads extending down the back which show where the wings will be.

The lower lip of the nymph is very large. It is hinged and a portion fits below the jaw and the remainder fits across the mouth and up over the insect's face. The lip is called a mask and it gives the insect's face a comical resemblance to the face of a bulldog. The mask can be extended forward and is armed with powerful hooks with which to grasp the prey.

The nymph usually moves by crawling but it can swim by a curious method. Through the center of the body runs a tube which ends in five tightly fitting valves. When the insect wishes to swim, it fills the tube with water, and then squirts out the contents forcibly. The result is that the whole body is sent forward.

Nymphs grow by moulting or shedding the skin. They may have as many as seven new coats. The last moult is above water.

Dragon-flies have close relatives which look very much like them and are often mistaken for them. These relatives are the damsel-flies. They differ from the dragon-flies in three ways: damsel-flies fold their wings together over their backs when resting; they have more brilliantly colored bodies, and are more slender and delicate in form.

Dragon-flies belong to one of the oldest groups of insects living today. Their ancestors can be found as fossils in rocks that were formed at the same time as our largest coal beds. Some of the early dragon-flies had a wing spread of more than two feet. Fossil damsel-flies are believed to be even more ancient than dragon-flies.

MARIE B. PABST, Guide-lecturer

Note: Fossil dragon-flies may be seen in Hall 38. A reproduction of one of the large fossil dragon-flies is in the Carboniferous forest case at the south end of the hall. Modern dragon-flies can be seen in Hall 18 in the case labelled, "Insect Life of the Dune Region."

Save your Museum Stories. You will find them useful for looking up things you may want to know.

The open hours are as follows:

Nov., Dec., Jan., Feb., Mar. - -	9 A.M. to 4:30 P.M.
Sundays, Nov. 1–Mar. 31 - - -	9 A.M. to 5:00 P.M.
April, September, October - - -	9 A.M. to 5:00 P.M.
May, June, July, August - - -	9 A.M. to 6:00 P.M.

Field Museum is free to children at all times.
It is free to adults on Thursdays, Saturdays, and Sundays.

CLIFFORD C. GREGG, Acting Director

MUSEUM STORIES FOR CHILDREN

Presented by

The James Nelson and Anna Louise Raymond Foundation
for Public School and Children's Lectures

FIELD MUSEUM OF NATURAL HISTORY

Series XXVIII, Number 6
April 10, 1937

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

JAPANESE HOMES

A Japanese home is usually very simple. To a newcomer in Japan the houses look more like shelters than permanent homes; they are so small and slight. They look unfinished, both the outside where the framework is always visible and the inside where there is practically no furniture. However, after a time one becomes accustomed to these homes and begins to appreciate them. The simple structure gives the home a peaceful air and the bare interior looks clean.

These homes are fairly easy to construct and cheap too. The framework posts are set into hollowed stones on top of the ground instead of on a sturdy foundation. The wooden posts are almost never painted; they gradually become darker with age and weathering but the natural beauty of the wood remains the same.

Only one or two of the house walls are permanent; the other sides are closed at night and in cold or stormy weather by means of heavy, wooden screens which slide along in grooves on the floor and ceiling. During the daytime these wooden screens are removed and packed away in boxes and the whole house is open to the air. Delicate shades made of split bamboo may be lowered far enough to keep out the hot sunshine but still allow the air to circulate. For cool weather when a little protection from the wind is needed, transparent paper screens are run in the grooves in place of the wooden screens.

The roof of the house is heavy in comparison to the slight framework. There are more elaborate details to the roof such as gables, angles and curves. Houses on farms and in small villages usually have thatched roofs. In the larger towns and cities the roofs are made of either shingles or tiles.

A veranda runs along one or two sides of the house. This is the threshold of the living room and all clogs or shoes must be removed and left on the veranda. The floors are covered with mats made of rushes. These mats are carefully fitted together so that the whole floor is covered—not a crack is left. The mats are all one size, six by three feet; the size of the room is told by the number of mats it takes to cover the floor.

The partitions between the rooms are paper screens which can be removed and the whole house made into one large room. The screens

often have designs or simple pictures on them—just enough to give a little ornament to an otherwise bare room. Occasionally in the finer homes a small alcove is built in the wall and a lovely vase with just one or a few flowers placed there. Or perhaps a beautiful picture is hung there, but whatever the ornament is, it is not elaborate.

The rooms are not large but they look so because of the lack of furniture. Mats are used in place of chairs; each person has a lacquer tray for a table and padded quilts are spread on the floor for beds. When not in use these things are stored away in cupboards in the walls. Each cupboard has a screen, which slides back and forth as a door.

There is little need for windows—plenty of light comes in through the paper screens. The few windows built into the houses are more for ornament than use.

The best rooms in the house are always at the back where they overlook the garden. It may be a miniature landscape with evergreen trees, a brook and foot bridge, rocks and stone lanterns. The fence around the garden may be of bamboo, reeds, rushes or brushwood. The Japanese take great pride in their gardens even though they are very small ones.

The kitchen may have a fireplace but the other rooms are heated by braziers burning charcoal. The braziers do not give much heat and the loose fitting wooden screens do not keep out the cold winds in the winter but the people dress warmly and they are accustomed to this type of house. The wealthy people in the cities may build better and more comfortable homes but even these are simple and have little furniture.

MIRIAM WOOD, Guide-lecturer

Note: In Hall 27 you may see the kind of woods used in the framework of the Japanese homes.

Save your Museum Stories. You will find them useful for looking up things you may want to know.

The open hours are as follows:

Nov., Dec., Jan., Feb., Mar. - -	9 A.M. to 4:30 P.M.
Sundays, Nov. 1–Mar. 31 - - -	9 A.M. to 5:00 P.M.
April, September, October - - -	9 A.M. to 5:00 P.M.
May, June, July, August - - -	9 A.M. to 6:00 P.M.

Field Museum is free to children at all times.
It is free to adults on Thursdays, Saturdays, and Sundays.

CLIFFORD C. GREGG, Acting Director

MUSEUM STORIES FOR CHILDREN

Presented by

The James Nelson and Anna Louise Raymond Foundation
for Public School and Children's Lectures

Series XXVIII, Number 7
April 17, 1937

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

BIRD AND ANIMAL PARTNERSHIPS

It is a common occurrence to find that certain animals and birds associate with each other. Sometimes they are found together only because of common feeding grounds. It is for this reason that ostriches are often seen with zebras and big game animals. Occasionally, however, the relationship is a closer one, making it possible for one to benefit from the other or for each to profit from the association.

The most familiar case of mutual gain is the relationship between the tick birds (ox birds) and certain animals, especially the rhinoceros, giraffe, buffalo, antelope and cattle. The birds are insect feeders and they hover around the animals eating the insects attracted by them. Carrying the relationship even further, the birds often perch on the animals' backs, or hop and run about them looking for ticks. Sometimes the ticks burrow down into the animal hides, and the tick bird uses his long bill to advantage as he digs the ticks out. The animals are very patient during this operation and often go right on feeding.

Some men have said, and witnessed the act, that the birds aid the animals in one other way. At the slightest sign of alarm, the birds fly into the air and utter hoarse calls; this incidentally serves as a warning to several animals who cannot see the oncoming danger.

Several other cases of bird and animal partnerships are found where the birds benefit in the same way—by feeding on the insects associated with the animals. The animals seem to pay little or no attention to the birds hovering about and often the animals profit in no way themselves except to be rid of the insect pests. For example, the cattle herons often associate with the buffaloes or cattle, only to feed on the insects disturbed from the grass by the movements of the animals. The fire-crowned tyrant birds of South America flutter about the marsh deer and perch on their backs for the same reason. In our own region the common cowbirds follow the cattle about, eating the insects stirred up by the cattle. It is this association that has given the bird its name, "cowbird."

Crocodiles often bask in the sunshine along the shores; certain shore birds are found there also, but not because of any partnership between the birds and the crocodiles. Both have common feeding grounds and because of this association the birds are called "crocodile birds."

An unusual association concerns a small bird in southern Africa appropriately named the honey guide bird. This bird is very fond of honey, honeycomb and even the grubs and bees; but the bird is not large enough or strong enough to open bees' nests without help. And so the fantastic but true story starts here: the bird guides people and occasionally honey badgers to the honey trees to open the nests for it. In the forest a person might be attracted by a chattering and fluttering bird in the tree. If the person starts toward the bird it flies to another tree and as the person follows, the bird leads on through the forest. The trail may be only a few yards and again it may go on for miles, but eventually the honey guide bird will stop in a tree where there is a nest of bees. Then the bird waits. A man ordinarily tears open the nest and takes the honey; the honeycomb, grubs and bees are thus left for the bird.

Perhaps before man became associated with these honey guide birds, badgers and similar animals opened the nests for the birds, but no one knows how or when the curious relationship started. Even now a honey badger will often follow the bird to the honey tree but more often it is a man who follows. It is thought that the curiosity of the badger causes it to trot along after the fluttering bird. But at the end of the trail the greedy badger tears apart the nest and usually eats the honey, comb and grubs, leaving only the bees for the honey guide bird. No more unusual story of bird and animal relationship could be told and yet it is true and has been witnessed by many people.

MIRIAM WOOD, Guide-lecturer

Note: In the African water-hole group in Hall 23 you may see a tick bird perched on the back of the black rhinoceros. The cattle herons are associated with the water buffaloes in Hall 17. In Hall 16 a fire-crowned tyrant bird is sitting on the marsh deer. Our common cowbird may be seen in Hall 22.

Save your Museum Stories. You will find them useful for looking up things you may want to know.

The open hours are as follows:

Nov., Dec., Jan., Feb., Mar. - -	9 A.M. to 4:30 P.M.
Sundays, Nov. 1–Mar. 31 - - -	9 A.M. to 5:00 P.M.
April, September, October - - -	9 A.M. to 5:00 P.M.
May, June, July, August - - -	9 A.M. to 6:00 P.M.

Field Museum is free to children at all times.
It is free to adults on Thursdays, Saturdays, and Sundays.

CLIFFORD C. GREGG, Acting Director

MUSEUM STORIES FOR CHILDREN

Presented by

The James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures

FIELD MUSEUM OF NATURAL HISTORY

Series XXVIII, Number 8
April 24, 1937

FIELD MUSEUM OF NATURAL HISTORY
Roosevelt Road and Lake Michigan
CHICAGO

THE RACCOONS AND THEIR COUSINS

The raccoon is a fur-covered animal that makes his home high up in a hollow tree near a marsh or stream on the edge of the woods. There he is safe from enemies when he stretches out for a sun-bath on a nearby limb and there his home is safe when he goes on his nightly hunt for food.

On these night forays he searches along the edge of the water for crayfish and frogs or goes into the meadow for the eggs and flesh of ground-nesting birds. He does not like the roots or stems of plants, but fruits suit his taste and he hunts for berries, and sometimes goes into the farmer's orchard for peaches. Best of all, he likes the sweet juice of the roasting ears of green corn.

One can follow his trail by the tracks that he leaves along the margin of the stream. On each foot he has five toes and on each toe is a fixed claw which cannot be withdrawn. His hind feet are plantigrade (the whole foot including the heel touches the ground when he walks) while most four-footed animals are digitigrade (walk on their toes with their heel raised from the ground). The only time the raccoon leaves toe prints only is when he runs. When in but a slight hurry, he moves in jumps, leaving two pairs of prints in which the small front feet are paired together and on either side the larger hind foot leaves a print like a miniature footprint of a man. When walking leisurely, he leaves but a pair of footprints, for then he sets the hind foot directly over the tracks made by the smaller front feet.

Raccoons are rather numerous but they do not live or hunt in large groups. A family usually stays together until the young are well grown and sometimes two or three families live in the same neighborhood.

The home life of a "coon" family is full of interesting experiences. In April or May four to six babies are born and the devoted parents watch them carefully. The mother nourishes them with milk until they are old enough to go hunting with her. When about a month old the little ones begin to venture outside their home and sit in the sun on some nearby limb. By July they can run up and down the tree and by August they have become skillful in securing their food while on the hunt.

A mother raccoon always teaches her young ones to wash their food by dipping it up and down in the water. That habit has earned for the

raccoon a part of his scientific name, *Procyon lotor* (*lotor*, meaning to wash). It is necessary to wash the dirt from the food taken out of the mud but the coon carries the habit into the washing of all food. Sometimes a baby raccoon falls into the water while doing this and his cries of distress bring the whole family to his rescue.

The cry of a young coon is similar to that of a baby, while the "whicker" of an old coon is a long, tremulous "Whoo-oo-oo" that is often mistaken for the call of the screech owl. When angry, a coon can growl so fiercely that he may put to rout the dog of the hunter who comes too close to the coon's home tree.

That tree is his fortress and by early autumn the raccoons are so well fed and fat that they are ready to curl up together in the home nest for their long winter sleep. They will not come out again until awakened by the warm sunshine of the following spring.

Raccoons are found from Alaska through the United States to Central America, and in Mexico and South America are their cousins—the coatis. These strange cousins with upturned noses live mostly in trees and feed chiefly on animal food. Another Mexican cousin is the Kinkajou or Japura, a pale yellow-brown creature with a long tongue that can lick insects out of the crevices and holes in the trees. In Asia another cousin, the Giant Panda, a good tree climber, spends much time down in the bamboo thickets, where he feeds on the leaves and tender shoots. Bears are related to raccoons but live much of their lives on the ground, and they have only short tails while the raccoon can boast a full, round, furry tail with dark rings around it.

The raccoons and their cousins are not many in number of families, but in habits and appearance they are much alike.

LEOTA G. THOMAS, Guide-lecturer

Note: In Halls 15, 16 and 17 are shown some members of the raccoon family and in Hall 20 there is a habitat group of the Giant Panda.

Save your Museum Stories. You will find them useful for looking up things you may want to know.

The open hours are as follows:

Nov., Dec., Jan., Feb., Mar. - -	9 A.M. to 4:30 P.M.
Sundays, Nov. 1 Mar. 31 - - -	9 A.M. to 5:00 P.M.
April, September, October - - -	9 A.M. to 5:00 P.M.
May, June, July, August - - -	9 A.M. to 6:00 P.M.

Field Museum is free to children at all times.
It is free to adults on Thursdays, Saturdays, and Sundays.

CLIFFORD C. GREGG, Acting Director